

We Claim:

1. An apparatus for controlling yaw in a motor vehicle comprising, in combination:

a rear axle having a pair of independently operable clutches adapted to drive a pair of rear axles, and pair of rear tire and wheel assemblies;

a plurality of speed sensors for sensing speeds of a plurality of tire and wheel assemblies;

a steering angle sensor;

a lateral acceleration sensor;

a yaw rate sensor; and

a microprocessor adapted to received signals from said sensors and provide first and second independent signals for actuating said pair of clutches, said microprocessor including means for detecting left and right oversteer and left and right understeer of said vehicle.

2. The apparatus of claim 1 wherein each of said pair of clutches includes an electromagnetic operator.

3. The apparatus of claim 1 wherein each of said pair of clutches includes a ball ramp operator.

4. The apparatus of claim 1 further including a first driveline including a transaxle, a pair of front axles, a pair of front tire and wheel assemblies and driving a rear propshaft.

5. The apparatus of claim 1 wherein said steering angle sensor senses rotation of a steering column of said vehicle.

6. The apparatus of claim 1 wherein said microprocessor includes a PWM driver circuit adapted to drive electromagnetic operators in said clutches.

7. The apparatus of claim 1 wherein said microprocessor computes a yaw acceleration value.

8. The apparatus of claim 1 wherein said microprocessor includes a proportional integral derivative controller.

9. A method of controlling yaw in a motor vehicle comprising the steps of:  
sensing speeds of wheels of such motor vehicle;  
sensing a position of a steering component of such vehicle;  
sensing a yaw rate of such vehicle;  
determining left oversteer, right oversteer, left understeer and right understeer of such vehicle;  
providing a rear axle having a pair of independently operable clutches adapted to drive a respective one of a pair of rear wheels; and

activating said clutches in response to said determining of understeer and over steer.

10. The method of controlling yaw in a motor vehicle of claim 9 further including the step of sensing lateral acceleration.

11. The method of controlling yaw in a motor vehicle of claim 9 further including the step of determining a yaw rate error signal.

12. The method of controlling yaw in a motor vehicle of claim 9 further including the step of determining a yaw acceleration value.

13. The method of controlling yaw in a motor vehicle of claim 9 further including the step of arbitrating between outputs of traction controllers and a dynamics controller.

14. The method of controlling yaw in a motor vehicle of claim 9 further including the step of sensing a throttle position of such vehicle.

15. A method of controlling yaw in a motor vehicle comprising the steps of:  
sensing speeds of wheels of such motor vehicle;  
sensing a position of a steering component of such vehicle;  
sensing a yaw rate of such vehicle;  
sensing lateral acceleration of such vehicle;

determining left oversteer, right oversteer, left understeer and right understeer of such vehicle;

providing a rear axle having a pair of independent operable clutches adapted to drive a response one of a pair of rear wheels, and activating said clutches in response to the sensing of understeer and over steer.

16. The method of claim 15 including the step of determining a yaw rate error signal.

17. The method of claim 16 further including the step of utilizing a proportional integral derivative controller to correct said yaw rate error signal.

18. The method of claim 15 including the step of determining a yaw acceleration value.

19. The method of claim 15 including the step of sensing a throttle position of such vehicle.

20. The method of claim 15 including the step of arbitrating between outputs of slip controllers and a yaw controller.